PHASE II INVESTIGATION REPORT
EMR CIRCUITS SITE
HAUPPAUGE, NEW YORK
ORDER ON CONSENT NO. W1-0376-81-01

PREPARED FOR:

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SECTION 1 - INTRODUCTION

1.0 Introduction

Blasland & Bouck Engineers, P.C. (Blasland & Bouck) was retained by Shea & Gould, on behalf of its client Grenlein Realty Company, to implement a Phase II Investigation at the EMR Circuits site located at 99 Marcus Boulevard, Town of Smithtown, Hauppauge, N.Y (Figure 1). The Phase II Investigation was conducted in conjunction with the New York State Department of Environmental Conservation's (NYSDEC's) Order on Consent #W1-0376-81-01, effective February 12, 1991. The Phase I Investigation was completed by EA Science and Technology in June 1987 (Appendix A).

This Phase II Investigation Report is being submitted in accordance with the requirements contained in the Order on Consent and Blasland & Bouck's letter to Mr. Daniel J. Eaton of NYSDEC dated March 20, 1991.

The Work Plan for a Phase II Investigation was previously submitted to NYSDEC by Roux Associates, Inc., on April 8, 1988. Blasland & Bouck made the appropriate revisions to the Work Plan, and in March 1991 received NYSDEC's approval to implement the Phase II Investigation, as modified in Blasland & Bouck's letter dated March 20, 1991 (Appendix B). Additional changes and/or modifications were subsequently made to and incorporated within the Work Plan, including NYSDECs recommendation to change the analytical laboratory. Changes to the work plan and modifications relating to field activities are documented in Appendix B.

The objective of the Phase II Investigation was to evaluate soil and ground-water conditions at the site to determine whether any hazardous waste was present and whether there was a significant threat to the public health or the environment. The field investigation, in accordance with the Work Plan

and Blasland & Bouck's March 20, 1991 letter, included a geophysical survey, the drilling of 10 exploratory soil borings, field screening of soil, analytical soil sampling, the installation of three monitoring wells, and analytical ground-water sampling.

The site is owned by the Grenlein Realty Company, and managed by Finkelstein Realty, Inc. From 1981 to 1984, the site was leased to EMR Circuits, Inc., which manufactured circuit boards. During this period, EMR reportedly discharged various chemical substances into two underground leachpools, without the knowledge of the owner or its managing agent. EMR had the leachpools cleaned out and filled with clean sand and gravel between November 11, 1983 and January 25, 1984. After EMR vacated the premises in about June of 1984, the owners arranged to have the remainder of the facility cleaned to the satisfaction of the Suffolk County Department of Health Services (SCDHS) from the ground surface up.

The SCDHS performed a preliminary ground-water evaluation at the site by installating a 130-foot-deep monitoring well in March of 1985. Findings revealed the presence of heavy metals in subsurface soils as well as trace levels of heavy metals and 1,1,1,-trichloroethane in the ground water beneath the site. The ground-water data however, were inconclusive and insufficient to confirm that a release of contaminants to ground water had occurred, and it was determined by NYSDEC that a Phase II Investigation should be conducted.

On February 12, 1991, Grenlein Realty Company, a partnership, and Jack Klein, acting on behalf of the partnership, voluntarily entered into an Order on Consent with NYSDEC to conduct a Phase II Investigation at the site. Because the site is classified as Type 2a by NYSDEC, the Phase II Investigation was to determine whether the site constitutes a significant threat

to public health or the environment, and to gather field data so that the site can be property classified, or declassified.

The Work Plan followed by Blasland & Bouck in conducting this Phase II Investigation specifies that all sampling procedures used would conform to NYSDEC protocols, and all samples would be analyzed and results reported following NYSDEC analytical services protocols (ASP) and deliverables. The analytical results generated from the soil and ground-water sampling program were reviewed and evaluated by comparison to NYSDEC Ambient Water Quality Standards and Guidance Values (September 25, 1990), as well as Contract Required Detection Limits (CRDL).

Based upon the results of this investigation, Blasland & Bouck recommends that the site be declassified and removed from the Registry of New York State Inactive Hazardous Waste Disposal Sites. No further investigative or monitoring procedures or remedial actions are warranted.

SECTION 2 - SITE HISTORY

2.0 Site History

The EMR Circuits site is located at 99 Marcus Boulevard on the corner of Kennedy Drive and Marcus Boulevard, in the Town of Smithtown, Suffolk County, New York (Figure 1). The property is owned by the Grenlein Realty Company, c/o Neil H. Klein, 175 Great Neck Road, Great Neck, New York, and is managed by Finkelstein Realty Inc. of Mineola, New York. EMR Circuits, Inc. leased the property and operated a circuit board manufacturing business at the site from 1981 until 1984. The business moved in about June 1984 to 89 Cabot Court in the Town of Smithtown. Since 1984, the EMR Circuits facility has been leased to and occupied by the Arista Lighting Company, which is a lighting fixture retail establishment.

Two previously existing underground leachpools, once used for the discharge of EMR's wastewater, were located under the driveway and parking lot on the north side of the only building located on site (Figure 2). In 1981, the SCDHS suspected EMR was illegally discharging hazardous waste; allegedly liquids were observed bubbling up through the cement driveway above the leachpools (Appendix A). On December 16, 1981, the SCDHS sampled a known leachpool via a tube through the floor drain. (The existence of the second leaching pool was not known until November 1983). It was determined by the SCDHS that EMR was discharging chemical wastes into the leachpool via a floor drain inside the facility. This determination was based on the results of the sampling conducted by the SCDHS which indicated that elevated levels of heavy metals were detected in the sample (Appendix A).

Upon the discovery of the illegal discharge, an administrative case was filed by the SCDHS against EMR. On April 26, 1982, EMR entered into a Consent Order (#IW 82-20) and agreed on the following actions: to cease all discharges until it had applied for and received a SPDES permit; to hold all industrial waste and to maintain receipts for any pickup of this waste; to apply for a permit to store hazardous materials; and to submit an engineering report identifying all industrial processes and discharges at the facility (Appendix A).

EMR was notified by the SCDHS to appear at a formal hearing on June 9, 1983 in connection with certain alleged violations of Article 12 and/or 2 of the Suffolk County Sanitary Code and/or ordinances, rules, regulations, and orders. As a result of the alleged violations, on June 17, 1983 EMR was issued a Commissioners Order by the SCDHS.

In October 1983, the SCDHS received a complaint from an EMR employee that hazardous wastes were still being discharged once or twice a week into the floor drain (Appendix A). In addition, they received complaints from a neighboring company (Data Recording Systems) that fumes from the EMR facility were causing physical discomfort to that company's employees (Appendix A). Further inspections and sampling by SCDHS confirmed these allegations (Appendix A). It was discovered that on weekends the owner and president of EMR Circuits, Stewart Wood, was dumping chemicals down the floor drain in the building which leads to the leaching pools and then cementing the floor drain over, only to chip away the concrete, discharge more chemicals, and then reseal the floor drain time after time (Appendix A). The exact quantity of the illegal discharge is unknown. Stewart Wood was arrested and subsequently convicted for dumping contaminated substances into the leachpools.

On November 11, 1983, EMR cleaned out, to the satisfaction of the SCDHS, a contaminated leachpool located approximately 10 feet north of the building. Three days later, the leachpool was backfilled with clean sand and gravel (Appendix A). During the clean out, a second leachpool was discovered approximately 2 feet from the building. This pool was sampled on November 18, 1983 and again on January 25, 1984. This second leachpool was cleaned out and backfilled with clean sand and gravel on January 25, 1984 (Appendix A). Under the direction of the SCDHS, EMR then had the remaining hazardous materials removed from the facility.

Following the owner's discovery of EMR's illegal activities, the owner of the site tried for months to have EMR evicted from the premises. Finally the owner was successful, and EMR vacated the premises in about June of 1984.

After EMR vacated the premises, the owner arranged to have the walls and floors of the building cleaned, and the building ventilated (Appendix A). The SCDHS considers the facility to be clean (remediated) from the ground surface up, including the locations of the former leachpools (Appendix A).

To determine the ground-water quality under the site, in March 1985, the SCDHS installed a 130-foot-deep monitoring well adjacent to the former leachpools on the north side of the building (Figure 2). Soil samples were taken from the well boring and analyzed for metals. The samples were found to contain detectable levels of some of the metals. New York State does not have any set standards for these constituents in soil; however, they were all detected below the commonly cited New Jersey Environmental Cleanup Responsibility Act (ECRA) soils cleanup standards. Water samples taken at depths of 115 and 127 feet below land surface were analyzed for organics and metals and were found to contain 1,1,1-trichloroethane at 390 parts per billion (ppb) (115 feet) and <20 ppb (127 feet), iron at 2,400 ppb (115 feet)

and 2,000 ppb (127 feet), and trace levels (below the NYSDEC Ambient Ground Water standard) of several other heavy metals (Appendix B).

In about January 1986, EA Science and Technology initiated a Phase I Investigation of the EMR site for NYSDEC. The purposes of this investigation were to: 1) obtain available records on the site history from state, federal, county, and local agencies; 2) obtain information on site topography, geology, local surface water and ground-water use, previous contamination assessment, and local demographics; 3) interview site owners, operators, and other groups or individuals knowledgeable of site operations; 4) conduct a site inspection to observe current conditions; and 5) prepare a Phase I report that includes a preliminary Hazard Ranking Score (HRS), an assessment of the available information, and a recommended work plan for a Phase II study.

The Phase I Investigation determined that the site does not pose a significant fire or explosion threat, and that insufficient data were available to confirm that a release to ground water had occurred. Specifically, ambient ground-water data were lacking. It was recommended by EA Science and Technology that a Phase II Investigation be initiated to evaluate potential ground-water contamination as a result of previous site activities.

On February 12, 1991, Grenlein Realty Company, a partnership, and Jack Klein, acting on behalf of the partnership, voluntarily entered into an Order on Consent with NYSDEC to conduct a Phase II Investigation at the site. The field work for the Phase II Investigation began on April 8, 1991.

SECTION 3 - METHODS OF INVESTIGATION

3.1 Geophysical Survey

3.1.1 Background

A surface geophysical survey was conducted on April 8, 1991 with an EEG magnetometer to determine the existence, or absence of, buried steel drums on the premises as outlined in Task II of the Work Plan (Appendix B). The survey, as originally indicated in the Work Plan submitted by Roux Associates, was to be performed using a Geonics EM-31 Non-Contacting Terrain Conductivity Meter (EM-31). Following Blasland & Bouck's discussions with NYSDEC, the alternative use of a magnetometer to complete this task was approved (Appendix B). Figure 3 depicts the two areas surveyed, Table 1 represents field-determined data points, and Appendix C contains the representative isopleth maps, three-dimensional views, and graphed data points for each surveyed line and row.

3.1.2 Theory of Operation

The magnetometer employed for the survey operates using the principle of proton precession. Detailed descriptions of theory can be found in Telford et al (1976) and Benson et al (1982). The instrument measures the earth's total magnetic field intensity and is not sensitive to operational orientation. Measurements represent the ambient magnetic field of the earth (which for the latitudes encountered in the United States is approximately 50,000 gammas), plus the effects of any sources which produce magnetic noise and anomalies. The gamma unit, which has recently been renamed the Nano Telsa, is used in this report because most of the literature and instrumentation in use still employ it. Because the survey was completed in a time period of a few

hours, any natural changes occurring in the earth's magnetic field were judged to be of little importance, and consequently were not corrected for.

3.1.3 Reconnaissance Survey

Prior to recording any measurements, a reconnaissance survey of the property was performed to identify areas where drum disposal may have occurred and which would not be subject to interference from surface and/or subsurface features. Two areas meeting this criteria were located. The first, located to the east of the building, is an unpaved area of approximately 14,000 ft^2. This area included the location of proposed monitoring well MW-2. The second area is the northern section of the 3,000 ft^2 area of the lawn located west of the building. This area included the location of proposed upgradient (background) monitoring well, MW-3. A third area considered, which included the location of proposed monitoring well MW-1, was not surveyed due to excessive interference from surface materials (e.g., automobiles and buildings) and interference from underground utilities. The locations of the surveyed areas are shown on Figure 3.

3.1.4 Grid Construction

Based upon the results of the reconnaissance survey, two grids were constructed: one to the east of the building in a non-paved area (Area 1), and one in a lawn area located to the west of the building (Area 2).

Grid node spacing, (i.e., the linear distance along traverse lines between measurement points), was initially set at 20 feet for each grid. An additional line was employed in Area 1 to investigate an anomalous area identified during the survey. Therefore, a total of 56 measurements were recorded for Area 1, using seven lines having eight stations each. For Area 2, four lines

with three stations each were used to record a total of 12 measurements (Figure 3).

Grids were constructed and measurement points marked before the recording of measurements. A non-magnetic material (wheat flour) was used to mark measurement points.

3.1.5 Data Collection

Data collection during the survey was accomplished by a two-person field crew which consisted of a magnetometer operator and a records keeper. Data was recorded manually by the operator at each grid node and entered into the field book by the records keeper.

Implementation of the site geophysical survey resulted in the recording of 56 measurements from Area 1, and 12 measurements from Area 2, as indicated on Table 1.

Appendix C contains the isopleth maps, three-dimensional views, and single line and row data points for each surveyed area.

3.2 Soil Borings and Soil Sampling

From May 5 to May 13, 1991, 10 soil borings were drilled: one deep boring (DB-1; 52 feet deep), six shallow soil borings (SB-1 through 6; 15 to 16 feet deep) and three monitoring well borings (117 feet deep) (Figure 2). Marine Pollution Control, Calverton, NY, conducted the drilling operations under the direct observation of a geologist from Blasland & Bouck.

A CME-55 truck-mounted hollow-stem auger rig was used to drill the borings and to collect split-spoon core barrel samples. Split-spoon core barrel samples were collected from each soil boring. After advancing a borehole to the required depth for sampling, a split-spoon sampler was

lowered down through the open axial stem of the hollow-stem augers. The split-spoon sampler was then advanced beyond the lead auger section into the undisturbed formation by a hammer-drop system. This method drives the split-spoon sampler into the formation by the impact of a 140-pound weight falling a distance of 30 inches. Each drop of the weight, or blow, is recorded to measure the resistance of the sediments to penetration by the sampler.

Split-spoon samples were collected continuously (2-foot intervals) from each borehole, except at soil borings MW-1, MW-2, and MW-3, where they were collected at 5-foot intervals. Split-spoon samples were collected in accordance with the American Society for Testing and Materials (ASTM) Standard Practice D-1586-62 (Appendix D).

Immediately after each soil sample was collected, the split-spoon was opened by the geologist and logged in detail for lithology and any evidence of contamination, (i.e., color, staining, odor, texture). Detailed geologic logs are provided in Appendix E along with Blasland & Bouck's Field Audit Report. Soil samples were also screened in the field with a portable photoionization detector (PID) for the presence of Volatile Organic Compounds (VOCs). Refer to Appendix F for the soil screening protocol.

Upon completion of each borehole, equipment was decontaminated as described in Appendix G so as to minimize the potential for cross-contamination.

Borehole material or cuttings brought to the surface during drilling were stockpiled on site plastic sheeting and covered with plastic sheeting at the end of each day. Based upon the results of the soil sampling from the boring program and field screening with the PID, in accordance with the

Work Plan, these materials are non-hazardous and can be redistributed on site.

3.3 Monitoring Well Installation

Upon completion of boreholes MW-1, MW-2, and MW-3, a monitoring well was inserted through the hollow center of each auger column. Monitoring well construction materials consist of 2-inch-diameter, schedule 80, flush joint, threaded PVC casing with approximately 20 feet of 0.020-inch slotted screen. A sand pack consisting of uniform, well-sorted, clean Morie #1 grade silica sand was used to fill the annular space surrounding the well screen and to a point 2-feet above the top of the screen. The purpose of the sand pack is to filter out fine material from the formation adjacent to the screen, and to facilitate ground-water flow into the well.

A 2-foot-thick hydrated bentonite pellet seal was then placed above the sand pack. This impermeable seal hydraulically isolates the monitoring well screen zone, thus protecting against the movement of water from the land surface down the casing-borehole annulus. The remaining annular space was then tremie filled to within one foot of land surface with cement grout. Well construction details are attached in Appendix E.

3.4 Monitoring Well Development

All monitoring wells were developed using a Waterra Hydrolift pump. Well development was completed so as to produce a hydraulic connection between the well and aquifer and to remove fine sediments from around the screen zone. Well development for wells MW-1, MW-2, and MW-3 was completed on May 15, 1991. Approximately 100 gallons of water was evacuated from each well. Well water was pumped into 55-gallon Department

of Transportation (D.O.T.) approved drums. The air at the air/water interface in each drum was periodically monitored with the PID for VOCs. Drum monitoring indicated no VOC levels exceeding 5 parts per million (ppm); therefore in accordance with the Work Plan, all drummed water was discharged on site onto the ground surface (Appendix G).

The wells were developed to a point at which the wells yielded water with a turbidity of less than 50 nephelometric turbidity units (NTUs). Total gallons of water pumped and recorded NTU readings are included as Table 2. NTU readings were recorded using a Hach Model 16800 Portalab Turbidimeter.

3.5 Monitoring Well Survey

A New York State licensed surveyor, Al Tay, completed a survey of all existing monitoring wells on the property. The elevations are in the nearest 0.010 foot in accuracy and based on a Suffolk County datum. Additionally, the exploratory borings were located in relation to the EMR Circuits building (see Certified Site Survey, Figure 4).

3.6 Ground-water Elevation Monitoring

Static water levels were measured periodically within all three monitoring wells over the course of approximately two months following their installation. The measurements were recorded to the nearest 0.01 foot using a sonic well depth indicator. Depth-to-water measurements are given in Table 3. Utilizing these measurements, in conjunction with the survey data, water-table elevations were determined and contoured in relation to United State Geological Survey (U.S.G.S.) data, Figures 5 through 7.

3.7 Ground-water Sampling

On June 5, 1991, ground-water samples were collected from monitoring wells MW-1, MW-2, and MW-3. To ensure a representable sample of the aquifer at the level of the screen zone, each well was purged removing at least four well volumes of water or until purged water indicated turbidity levels less than 50 NTUs. In addition, the purged water was periodically monitored for changes in pH, conductivity, and temperature (Table 4). As requested by NYSDEC, a Timco Stage 1 bladder pump with dedicated tubing was used to purge the wells and dedicated Teflon bailers were used to collect the samples. Monitoring well purging, sampling, and equipment decontamination procedures are included as Appendix G.

3.8 Development of Sedimentary Cross-Section

Utilizing the boring logs produced during the soil boring operations at the site, a cross-sectional diagram (Figure 8) was produced along an inferred A-A' line. The sedimentary cross-section provides information on site sediments to a depth of approximately 115 feet below grade.

SECTION 4 - HYDROGEOLOGY

4.1 Regional Hydrogeology

The site is located in the Atlantic Coastal Plain Physiographic Province. The subsurface geology consists of unconsolidated sand, silt, clay, and gravel layers overlying crystalline bedrock. The unconsolidated layers dip to the southeast and generally follow the contours of the bedrock surface.

The unconsolidated material is of Pleistocene and Cretaceous age. These deposits are over 1,000 feet thick under the site and overlie Precambrian Age gneiss and schist bedrock. From oldest (deepest) to youngest (shallowest) these sediments have been identified and divided into a series of hydrogeologic units: the Lloyd Aquifer, the Raritan Clay confining unit, the Magothy Aquifer, and the Upper Glacial Aquifer. The Upper Glacial Aquifer and the Magothy Aquifer act as a single hydrogeological unit and are the only aquifers reportedly developed by wells for water supply the vicinity of the site (Appendix A).

The Upper Glacial Aquifer consists of glacial outwash deposits of Pleistocene age. The Pleistocene deposits are approximately 200 feet thick beneath the site and are largely comprised of stratified sand and gravel. The water table at the site is found in this aquifer and is approximately 100 feet below land surface.

The Magothy Aquifer is estimated to be 650 feet in thickness beneath the site and is comprised of deposits from the Matawan Group - Magothy Formation. These deposits are largely composed of beds or lenses of fine to coarse sand, silt, and clay.

The Lloyd Aquifer is estimated to be approximately 350 feet thick in the area of the site and consists mostly of beds and lenses of sand and gravel with small to large amounts of interstratified clay and silt.

4.2 Site Hydrogeology

All soil borings for this study were drilled into the morainal deposits of the Upper Glacial Aquifer. The morainal deposits are estimated to be approximately 200 feet thick beneath the site. The borings range in depth from approximately 15 feet (SB-1 through SB-6) to 117 feet (MW-1 through MW-3). Geologic logs for all of the borings are given as Appendix E.

The morainal deposits at the site consist predominantly of medium to coarse sand with interbedded layers and lenses of gravel and cobbles mixed with a trace amount of fine sand and silt (Figure 8).

4.3 Ground-Water Flow

Water-level measurements were recorded on May 15, May 30, and June 4, 1991. The depths to water on these dates and the elevations of the water table surface are provided on Table 3. From these data, water table contour maps have been prepared (Figures 5 through 7). As depicted on the contour maps, ground-water flows in a northeast direction. By estimating the permeability of the saturated deposits, based upon geologic logs, an assumed ground-water hydraulic conductivity of $1x10^{4}$ (gal/day/ft^2) was calculated (utilizing the metohd outlined in Freeze & Cherry, 1979).

SECTION 5 - SUMMARY OF ANALYTICAL RESULTS

5.1 Soil

A total of 15 soil samples were collected for laboratory analysis of the Target Compound List volatile organic compound (VOCs) and 15 additional peaks (TCL+15), site-specific VOCs, and EP Toxicity testing on 14 metals (eight RCRA and six site-specific). See Appendix H for complete analytical results. All samples were analyzed in accordance with the 1989 NYSDEC ASP. Additional soil samples from MW-1 (95 to 97 feet) and MW-1 (115 to 117 feet) were collected as duplicate samples and submitted blindly to the laboratory as part of the Quality Assurance/Quality Control (QA/QC) Program. The soil sample collected from the boring for MW-1 at 95 to 97 feet was analyzed for the complete Target Compound List.

The results of the 14 metals analysis as well as the analytical results for VOCs related to the chemicals utilized at the facility, indicate levels were not detected above the CRDL. Table 5 lists the site-specific chemicals and metals utilized at the EMR Circuits facility.

5.2 Ground Water

All three monitoring wells were sampled on June 5, 1991 and analyzed for TCL+15 and site-specific VOCs and TCL metals. Originally the Work Plan called for the eight RCRA metals, but at the request of NYSDEC the analysis was expanded to the TCL metals. MW-1 was also analyzed for the complete TCL parameters.

Results of the ground-water sampling analysis (Appendix H) indicate the presence of only three VOCs: 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene (See Table 6). All three were detected at levels above

the New York State Standard of 5.0 ppb. Specifically, 1,1,1-trichloroethane was detected at levels of 87.0, 250.0, and 31.0 ppb in MW-1, MW-2, and MW-3, respectively. Trichloroethylene was detected at levels of 99.0, 200.0, and 120.0 ppb in MW-1, MW-2, and MW-3 respectively. Tetrachloroethylene was detected at levels of 34.0, 51.0, and 35.0 ppb in MW-1, MW-2, and MW-3, respectively.

With regard to these three VOCs detected in the ground water beneath this site, it should be noted that two of them, trichloroethylene and tetrachloroethylene, are not known to have been used at the site (See Table 5).

Of the remaining parameters analyzed for in the ground-water samples, with regard to the TCL metals, only one metal (zinc) was detected at a level slightly above its New York State Standard. The upgradient monitoring well MW-3, detected zinc at a level of 369.0 ppb. The New York State Standard for zinc is 300.0 ppb (Table 7).

Soil and water samples were analyzed by Aquatec, Inc. of Burlington, Vermont. The results were then validated by Data Validation Services of Riparius, New Jersery. Appendix I contains the Data Validation Services summary.

In addition, a laboratory audit was conducted by Blasland & Bouck personnel (Appendix J).

SECTION 6 - CONCLUSIONS

6.1 Soil

6.1.1 Geophysical Survey

The purpose of this survey was to determine the presence or absence of buried, drummed material outside of the structure. The two areas chosen for investigation with the concurrence of NYSDEC were located by determining those areas amenable to drum disposal (Figure 3).

The isopleth maps of the areas surveyed (Appendix C) indicate no anomalous areas indicative of buried, drummed material. Therefore, it is concluded that none exist in the surveyed areas, and based upon the site history no other areas are likely to contain drummed materials.

6.1.2 Soil Borings

Soil borings were completed and samples collected for laboratory analysis in the areas indicated on Figure 2. These locations were based upon regional ground-water flow direction (northeasterly), proximity to leaching pools, and the need to acquire background samples.

The complete analytical results are included in Appendix H. As earlier discussed, analysis for TCL+15 and site-specific VOCs as well as EP toxicity testing for the RCRA and site-specific metals indicate levels were not detected above the CRDL. This should be especially noted regarding the samples from borings DB-1, SB-1 to SB-3 and MW-1, all of which are in, or in close proximity to (within 40 feet), the area of the old leaching pools (Figure 2). Therefore, there is no indication of any soils contamination at the site, or any indication of a direct release from the old leaching pools to the surrounding soils.

6.2 Ground Water

Tables 6 and 7 summarize the laboratory analysis for the TCL+15 and TCL metals (respectively) detected in ground water beneath the site. Table 5 indicates the chemicals and metals known to be utilized by the EMR Circuits facility.

Three VOCs were detected in the ground-water samples above the CRDL: 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene.[1] The concentrations of these VOCs were substantially the same throughout the study area (i.e., in all three monitoring wells). Although the furthest downgradient well contains slightly higher concentrations of 1,1,1-trichloroethane and trichloroethylene, such concentrations are not indicative of a contaminant source on site, nor do they indicate that a direct release of contaminants from the leachpools to the ground water has occurred. This conclusion is based on the following: 1) the same three VOCs were detected in substantially the same concentrations in the upgradient and downgradient monitoring wells. The slightly higher concentrations of two of the VOCs in monitoring well MW-2 can be attributed to variations in the localized ground-water flow direction; 2) none of the other site specific VOCs were detected in the downgradient monitoring wells, which would be expected if a release to ground water had occurred from the former leaching pools; and 3) the soil samples from the site (including the former leaching pool area) were all non-detect for these compounds.

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[1]Methylene chloride and acetone were also detected in the ground water and soil samples. However, these compounds were also detected in the laboratory blanks. Therefore it is believed that the occurrence of these compounds in the samples is the result of cross-contamination in the laboratory.

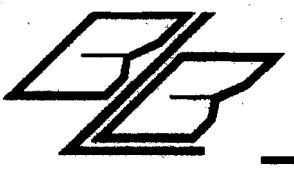
The results of the analysis for TCL and site specific metals indicated that zinc was the only compound detected above the New York State ambient ground-water standard of 300.0 ppb. This detection was in the upgradient monitoring well MW-3 and was 369.0 ppb. Therefore, there is no indication of a direct release of these metals to ground water from the former leaching pools.

As previously mentioned in Section 1.0, the SCDHS conducted a preliminary ground-water investigation in March 1985. The findings of this investigation proved to be inconclusive and insufficient to confirm that a release to ground-water had occurred, and it was determined by NYSDEC that Phase II Investigation should be conducted. Based upon the results of this investigation it is our conclusion that the results of the SCDHS ground-water investigation were indicative of the ambient ground-water quality at that time and not the result of site activities.

6.3 Summary

The SCDHS has determined that the former leaching pools and the facility from ground surface up have been satisfactorily remediated (Appendix B). Analytical results of the Phase II soil boring samples indicate that all parameters analyzed for were non-detect (as discussed earlier), and therefore confirm the SCDHS determination. Therefore, it is our conclusion that no source contaminant material exists at the site, nor was there any release of such contaminant materials from the former leaching pools. The results of the ground-water sampling indicate that the site is not a source of ground-water degradation. Therefore, this facility does not pose a significant threat to public health or the environment, nor is there any evidence of present or potential adverse impact to the environment from the site.

Based upon the results of this investigation, Blasland & Bouck recommends that the site be declassified and removed from the Registry of New York State Inactive Hazardous Waste Disposal Sites. No further investigative or monitoring procedures or remedial actions are warranted.



Tables

Phase II Investigation
EMR Circuits Site
Hauppauge, New York

TABLE 1

EEG Magnetometer Survey - April 8, 1991
Data Points

Area 1 (Field Area East of Building)

	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 5A	LINE 6
ROW 1	54,185	54,188	54,156	54,129	54,118	54,237	54,765
ROW 2	54,245	54,238	54,266	54,187	54,096	54.119	54,816
ROW 3	54,273	54,279	54,343	54,191	53,974	53,755	53,276
ROW 4	54,284	54,280	54,260	54,134	53,982	53,746	53,024
ROW 5	54,296	54,271	54,223	54,204	54,079	53,959	53,567
ROW 6	54,303	54,290	54,269	54,251	54,119	54,066	54,140
ROW 7	54,301	54,294	54,290	54,217	54,108	54,005	53,760
ROW 8	54,246	54,285	54,547	54,352	54,131	54,020	53,786

MIN	53,024
AVG	54,142
MAX	54,816
VAR	80,577
STD	284

Area 2 (Lawn Area West of Building)

	LINE 1	LINE 2	LINE 3	LINE 4
ROW 1	54,114	52,518	53,014	53,316
ROW 2	53,884	53,879	53,869	53,893
ROW 3	54,189	53,988	54,020	54,298

MIN	52,518
AVG	53,749
MAX	54,298
VAR	256,010
STD	506

Note: All measurements are in gammas

Phase II Investigation
EMR Circuits Site
Hauppauge, New York

TABLE 2

Monitoring Well Development

May 15, 1991

Well No.	Purge Volume (Gallons)	NTUs	OVM (ppm)
MW-1	30.0	86.0	0.0
	55.0	24.0	0.0
	100.0	11.0	0.0
MW-2	55.0	26.0	0.0
	100.0	13.5	0.0
MW-3	45.0	80.0	0.0
	55.0	58.0	0.0
	95.0	35.0	0.0

Phase II Investigation
EMR Circuits Site
Hauppauge, New York

TABLE 3

Summary of Water Table Measurements

	M.P. Elevation[1]	Depth to Water	Water Table Elevation[1]
		May 15, 1991	
MW-1	154.17	99.07	55.10
MW-2	155.38	100.58	54.80
MW-3	154.81	99.61	55.20
		May 30, 1991	
MW-1	154.17	99.40	54.77
MW-2	155.38	100.81	54.57
MW-3	154.81	99.88	54.93
		June 4, 1991	
MW-1	154.17	99.33	54.84
MW-2	155.38	100.89	54.49
MW-3	154.81	99.10	55.71

M.P. - Measuring Point (Top of PVC Casing)
(1) - In feet relative to U.S.G.S. Datum

Phase II Investigation
EMR Circuits Site
Hauppauge, New York

Table 4

MEASUREMENTS OF GROUND-WATER

SPECIFIC CONDUCTIVITY, pH, AND TURBIDITY

During Sampling (June 5, 1991)

Well No.	Purge Volume (Gallons)	Specific Cond. (micromhos)	pH	Tubidity (NTU's)
MW-1	0.10	170	6.38	96
	6.00	120	6.33	6
	13.5	160	6.20	42
MW-2	0.10	167	6.56	21
	3	234	6.29	24
	9	132	6.30	11
	11	140	6.35	*100
MW-3	0.10	475	6.34	44
	1.35	580	5.98	24
	3.00	570	6.05	8
	5.4	580	5.99	3
	5.5	466	5.98	*>100

* Well became turbid due to surging well water with bladder pump. Allowed water to settle before sampling.

Phase II Investigation
EMR Circuits Site
Hauppauge, New York

TABLE 5

Site Specific Chemicals and Metals

1,1,1-Trichloroethane

1,1,2-Trichloroethylene

Tetrachloroethylene

p-ethyltoluene

Trichlorobenzene

Methyl Ethyl Ketone

Xylene

Copper

Lead

Nickel

Chromium

Zinc

Silver

Phase II Investigation
EMR Circuits Site
Hauppauge, New York

TABLE 6

Summary of Volatile Organic Compounds
Detected in Ground Water
Concentrations in ppb

Parameter	MW1	MW2	Duplicate	MW3
1,1,1-Trichloroethane	87.0	250.0	260.0	31.0
Trichloroethylene	99.0	200.0	190.0	120.0
Tetrachloroethylene	34.0	51.0	50.0	35.0

All other Volatile Organic Compounds analyzed for were non-detect.

Phase II Investigation
EMR Circuits Site
Hauppauge, New York

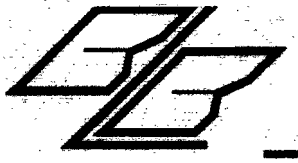
TABLE 7

Summary of TCL Metals
Detected in Ground Water
Concentrations in ppb

Parameter	MW1	MW2	MW2 Duplicate	MW3
TCL Metals				
Barium	20.3	64.5	63.9	503.0
Lead	4.7	1.0	1.0	0.86
Selenium	ND	ND	ND	1.8(B)
Copper	76.5	13.6	ND	ND
Nickel	ND	25.7	21.2	84.5
Zinc	22.3	12.0	14.2	369.0

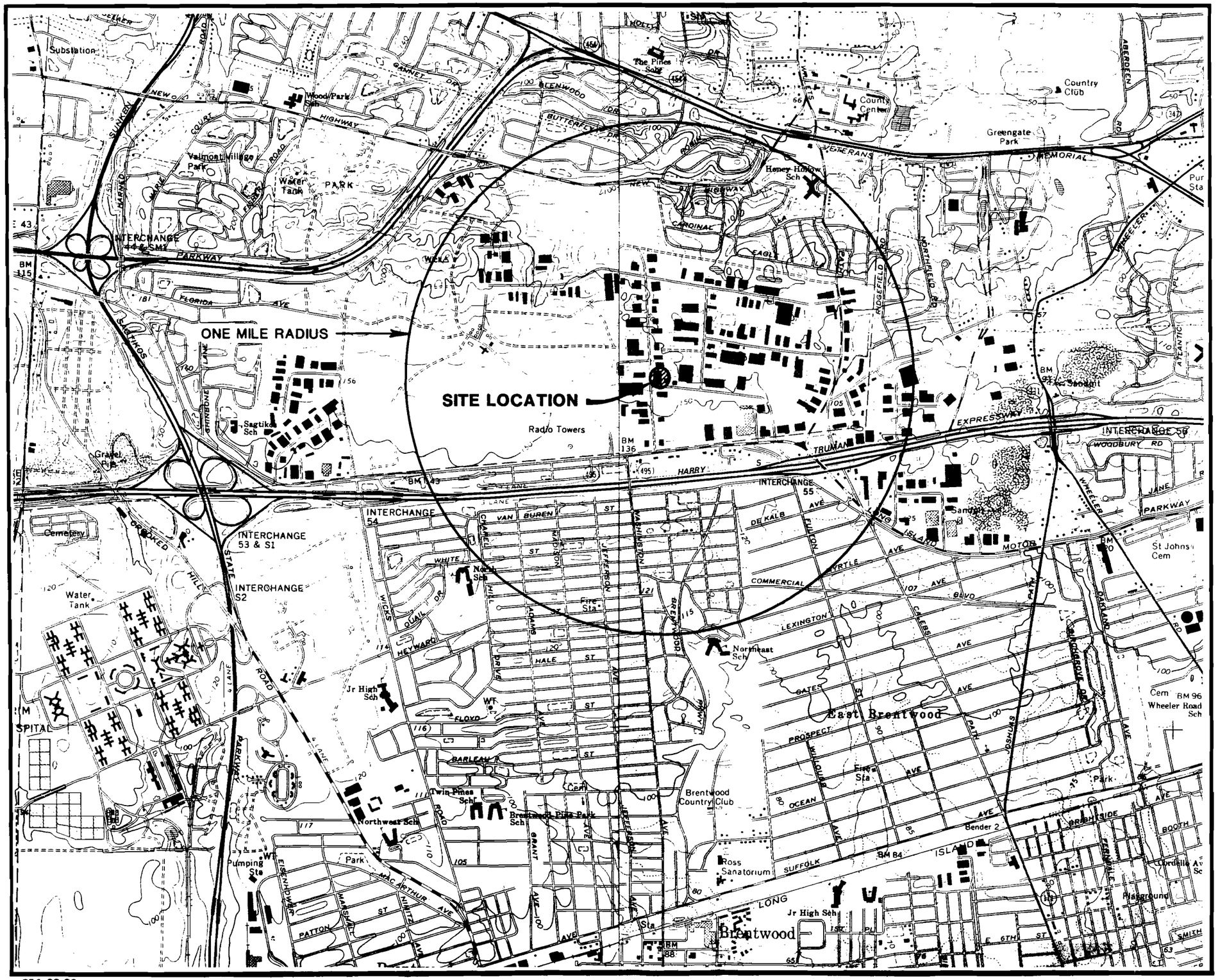
ND - Not detected, refer to laboratory report for parameter detection limits.
B - Less than contract detection limit, greater than instrument detection limit.
* - No applicable standard.
Reference: NYSDEC, NYS Ambient Water Quality Standards & Guidance Values, Sept. 25, 1990.

All other TCL metals analyzed for were non-detect.



Figures

FIGURE 1



EMR CIRCUITS
HAUPPAUGE, NY

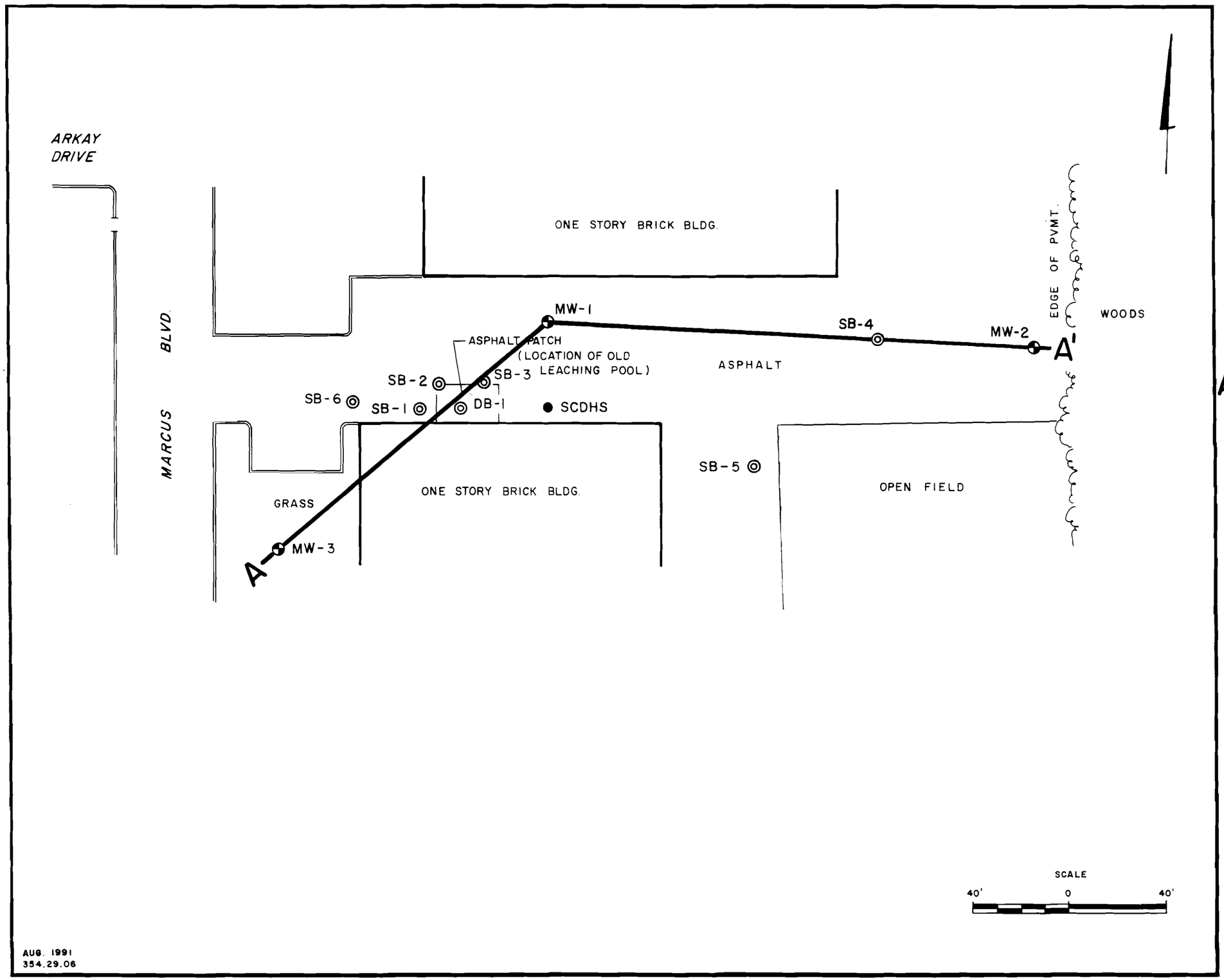
SITE LOCATION MAP

SCALE
2000' 0 2000'

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

354.29.06
JULY 1991

FIGURE 2



LEGEND

- GROUND-WATER MONITORING WELL
- SOIL BORING
- SCDHS GROUND-WATER MONITORING WELL
- A—A' CROSS SECTION LOCATION

EMR CIRCUITS
HAUPPAUGE, NY

SITE MAP

AUG. 1991
354.29.06

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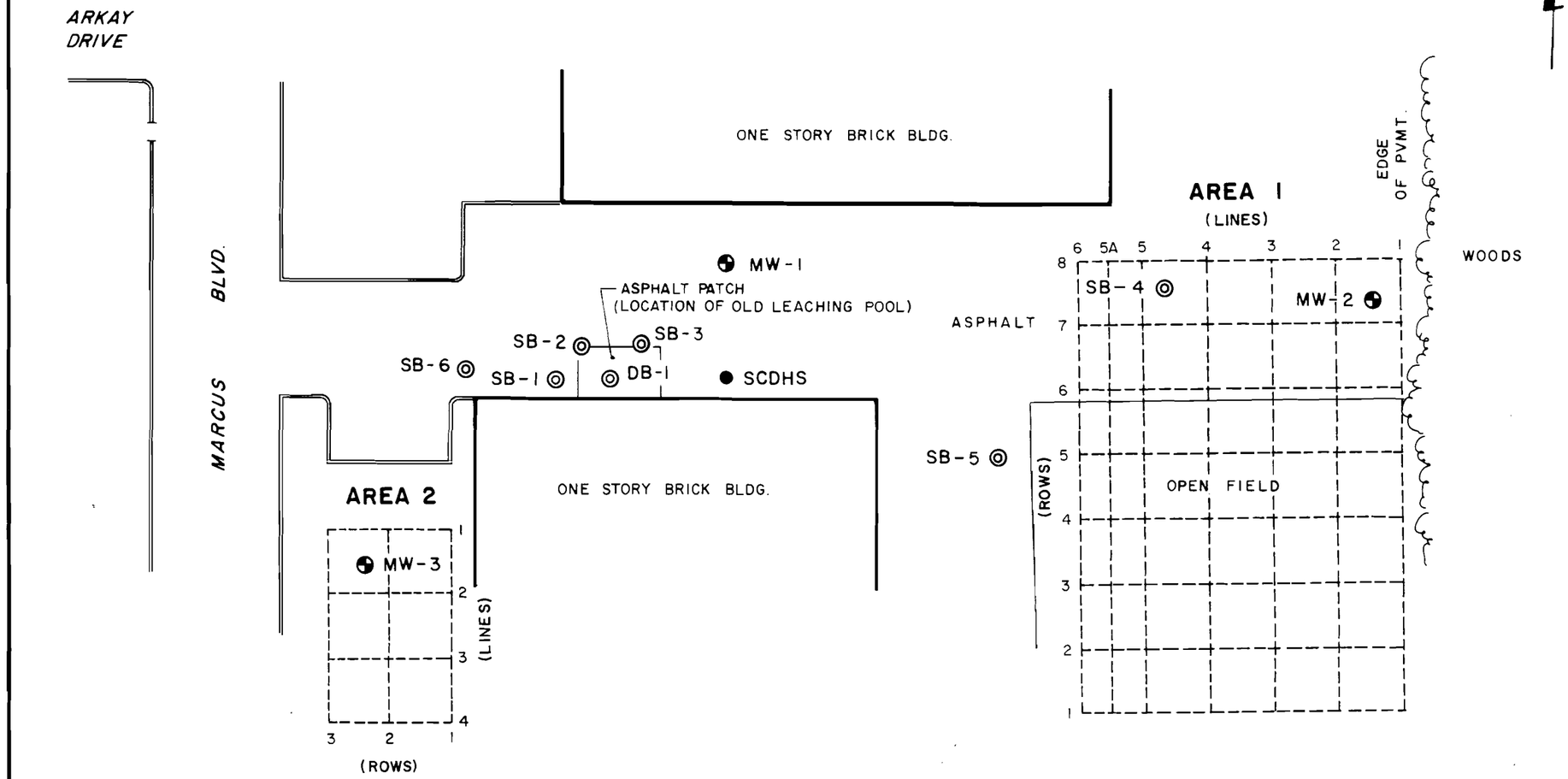
ENGINEERS & GEOSCIENTISTS

FIGURE 3



LEGEND

- GROUND-WATER MONITORING WELL
- SOIL BORING
- SCDHS GROUND-WATER MONITORING WELL

EMR CIRCUITS
HAUPPAUGE, NY

GEOPHYSICAL SURVEY GRIDS AREA 1 & AREA 2

AUG. 1991
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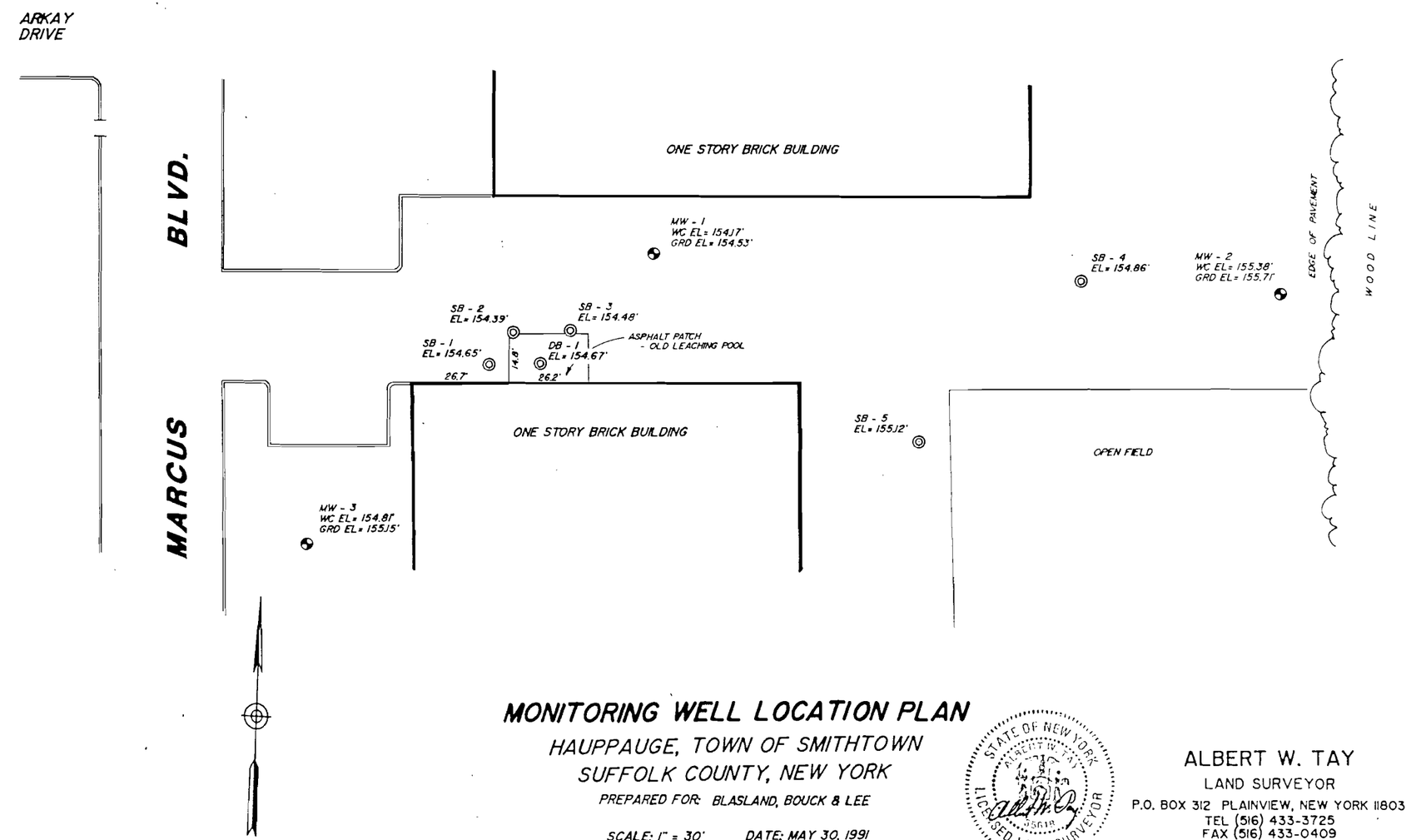
ENGINEERS & GEOSCIENTISTS

FIGURE 4



MONITORING WELL LOCATION PLAN

HAUPPAUGE, TOWN OF SMITHTOWN
SUFFOLK COUNTY, NEW YORK

PREPARED FOR: BLASLAND, BOUCK & LEE

SCALE: 1" = 30' DATE: MAY 30, 1991

NOTE: ELEVATIONS ARE IN U.S.C. & G.S. DATUM

STATE OF NEW YORK
ALBERT W. TAY
LICENSED LAND SURVEYOR

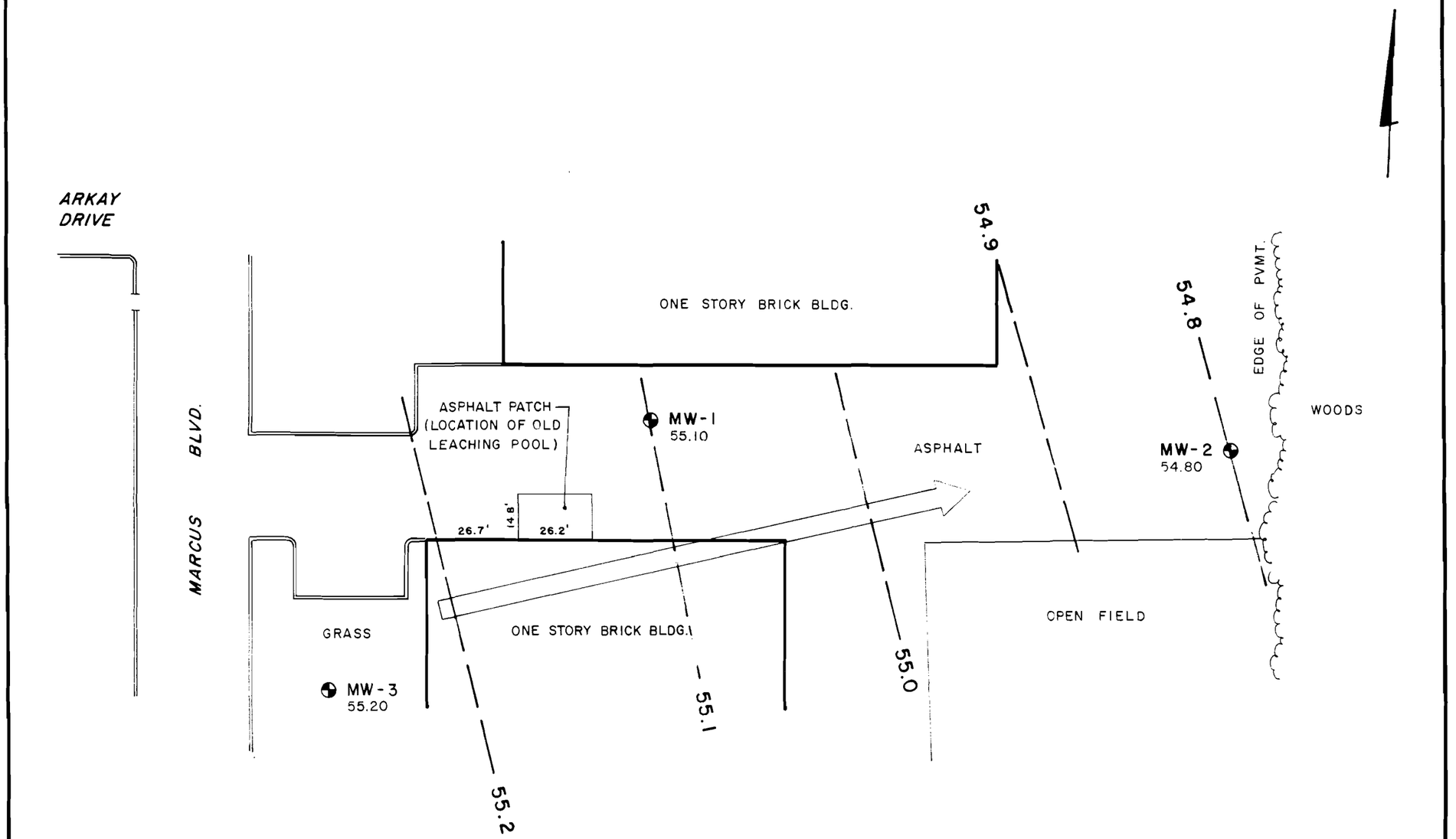
ALBERT W. TAY
LAND SURVEYOR
P.O. BOX 312 PLAINVIEW, NEW YORK 11803
TEL (516) 433-3725
FAX (516) 433-0409

EMR CIRCUITS
HAUPPAUGE, N.Y.

CERTIFIED SITE SURVEY

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

FIGURE 5



LEGEND

- GROUND-WATER MONITORING WELL INSTALLED BY BLASLAND & BOUCK ENGINEERS, P.C.
- 54.80 GROUND-WATER ELEVATION
- 55.1 GROUND-WATER CONTOUR LINE
- GROUND-WATER FLOW DIRECTION

SCALE
40' 0 40'

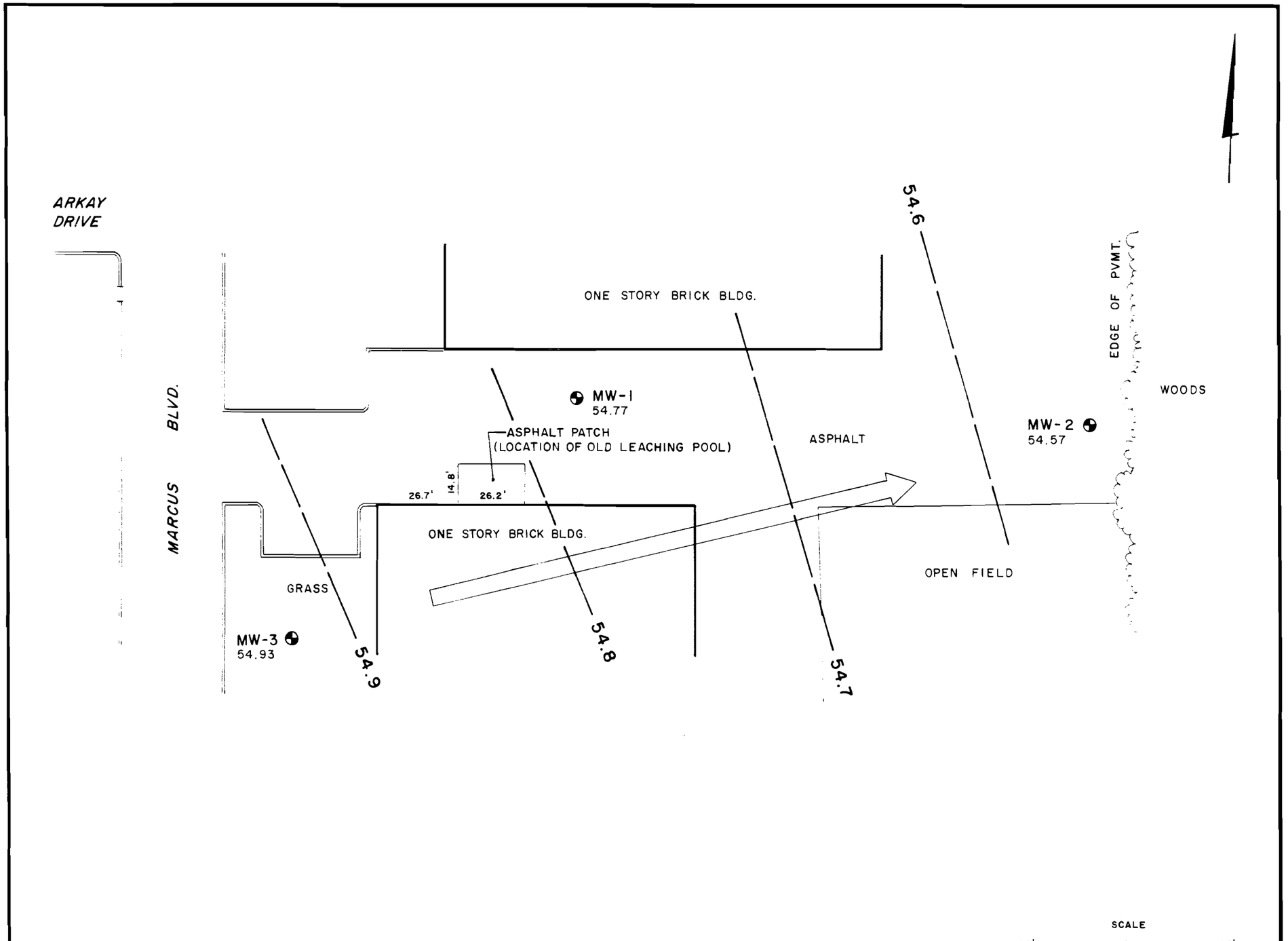
JULY 1991
354.29.06

EMR CIRCUITS
HAUPPAUGE, NY

GROUND-WATER CONTOUR MAP
MAY 15, 1991

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

FIGURE 6



LEGEND

- GROUND-WATER MONITORING WELL INSTALLED BY BLASLAND & BOUCK ENGINEERS, P.C.
- 54.77 GROUND-WATER ELEVATION
- 54.8 — GROUND-WATER CONTOUR LINE
- GROUND-WATER FLOW DIRECTION

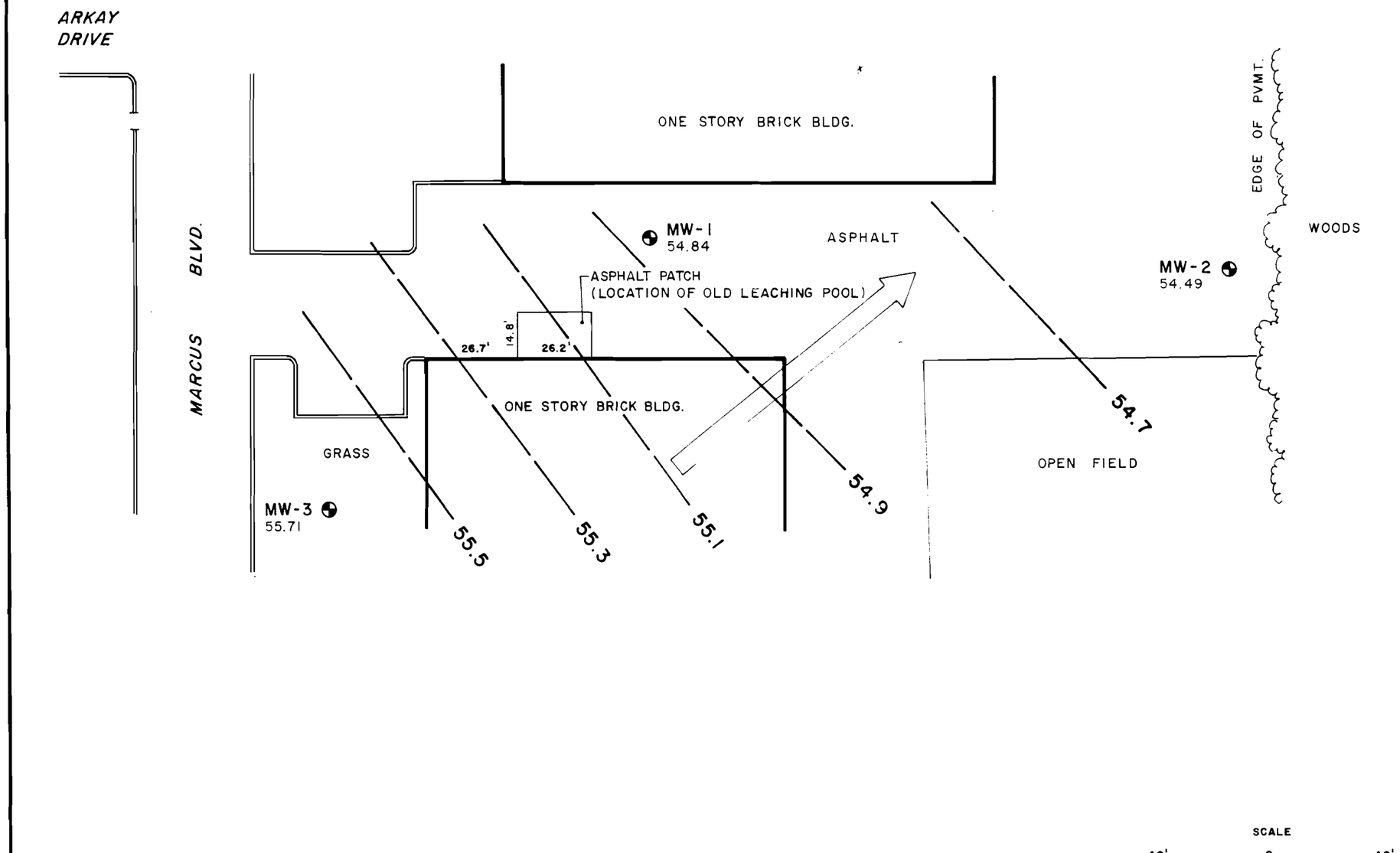
EMR CIRCUITS
HAUPPAUGE, NY

GROUND-WATER CONTOUR MAP
MAY 30, 1991

JULY 1991
354.29.06

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

FIGURE 7



LEGEND

- GROUND-WATER MONITORING WELL INSTALLED BY BLASLAND & BOUCK ENGINEERS, P.C.
- 54.84 GROUND-WATER ELEVATION
- 55.1 GROUND-WATER CONTOUR LINE
- GROUND-WATER FLOW DIRECTION

EMR CIRCUITS
HAUPPAUGE, NY

GROUND-WATER CONTOUR MAP
JUNE 4, 1991

AUG. 1991
354.29.06

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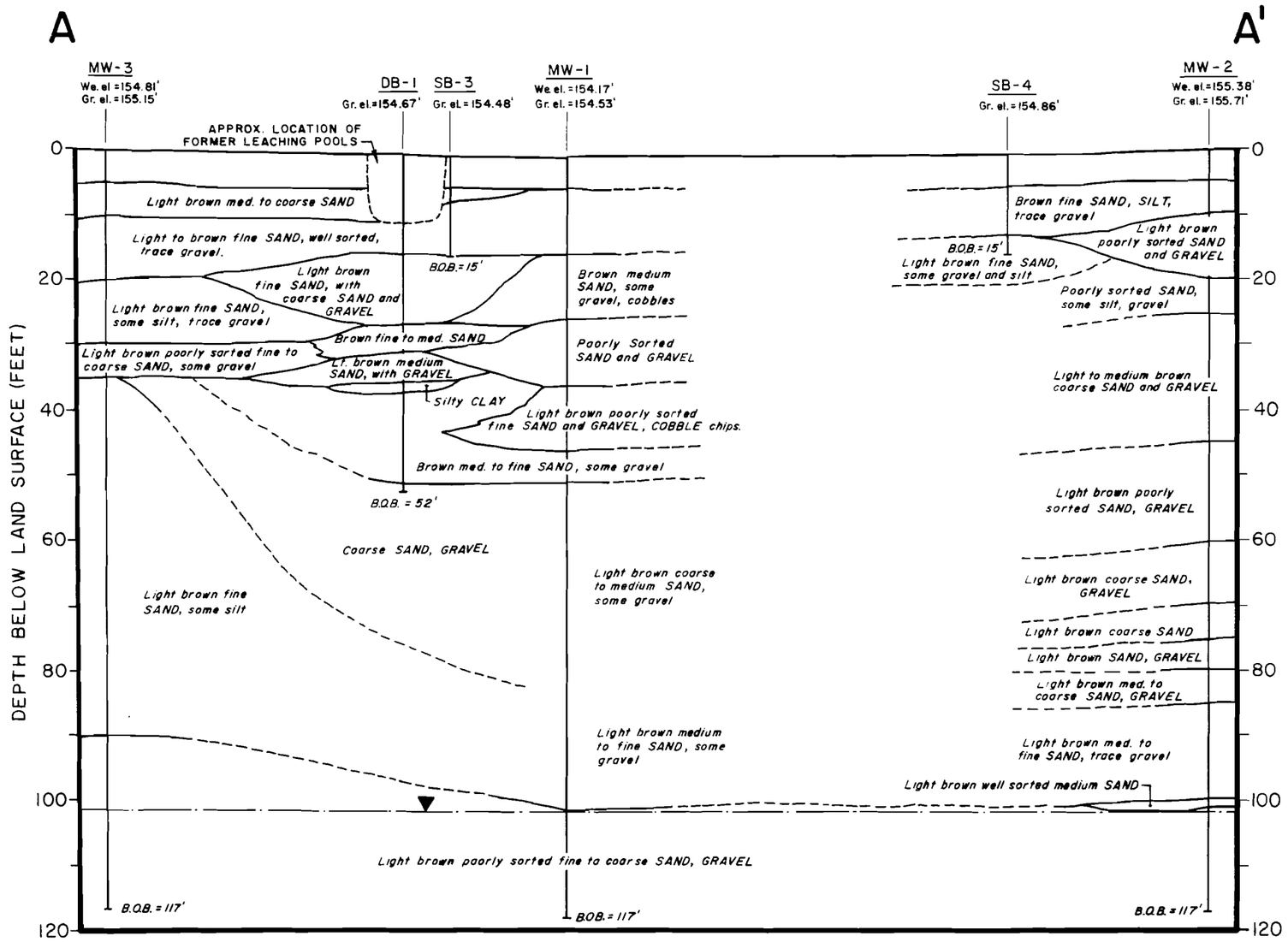
FIGURE 8



HORIZONTAL SCALE

40' 0 40'

AUG. 1991
354.29.06

EMR CIRCUITS
HAUPPAUGE, NY

GEOLOGIC
CROSS SECTION
A-A'

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS